Center Independent Research & Development: GSFC IRAD

Novel Low-Impact Integration of a Microwave Radiometer into Cloud Radar System

Completed Technology Project (2012 - 2014)

Project Introduction

The purpose of the Novel Low-Impact Integration of a Microwave Radiometer into Cloud Radar System project is a passive channel into the NASA Goddard Space Flight Center's airborne Cloud Radar System (CRS). This channel will be received at a high data rate along with the radar data to enable careful thresholding of received data during the presence of strong radar signals during post-processing. The addition of this radiometric feature will provide co-located brightness temperature measurements without impacting the performance of the radar, therefore significantly enhancing the science measurement capability of the instrument.

The radiometer channel will have significant filtering to reduce the contamination of the radar signal into the radiometer channels. The successful isolation between the channels can then be confirmed through correlation calculations between the radar and radiometer data. After aggressive thresholding and filtering to isolate the radar and radiometer channels, the radiometer data can be averaged to provide a conventional brightness temperature product.

Anticipated Benefits

This technology can be used to provide co-located brightness temperature with non-phased array airborne or spaceborne radars with a sufficiently wide-band receiver and antenna such as ACE. Even on missions where microwave radiometers are present in addition to the radar, this additional receiver channel provides the benefit of brightness temperature data co-located and matched with the radar data beam.

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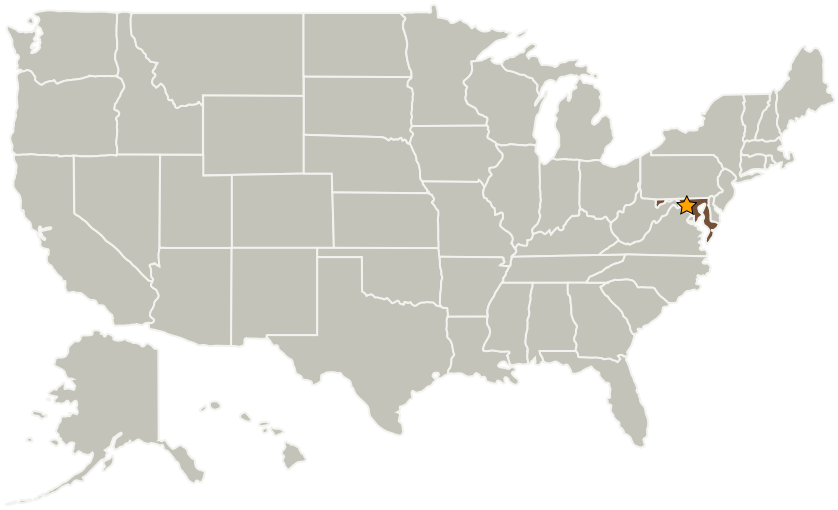
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

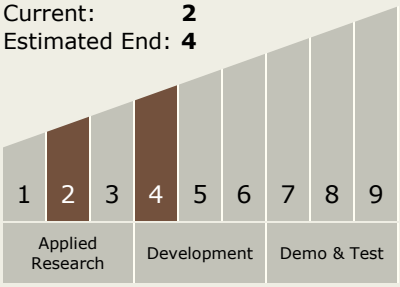
Terence A Doiron

Principal Investigator:

Matthew L Walker Mclinden

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves